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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

*Attorney Docket No. PHN 17 383 (033615-0127)*

Applicant: Lefki *et al.*  
Title: HAIR-REMOVING DEVICE WITH A CONTROLLABLE  
LASER SOURCE  
Appl. No.: 09/548,730  
Filing Date: April 13, 2000  
Examiner: Ahmed M. FARAH  
Art Unit: 3739

REPLY BRIEF

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TECHNOLOGY CENTER R3700

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

This Reply Brief is timely submitted in triplicate and within a two month period from the issuance of the Examiner's Answer dated May 14, 2003. This Reply Brief addresses issues which have been raised by the Examiner in response to arguments presented in the Appeal Brief.

In this Answer, the Examiner has stated that the Brief "does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none."

However, it is respectfully pointed out that under the heading of Related Appeals and Interferences, it is set forth that:

"There is no other appeal or interference that would directly affect or be directly affected by or have a bearing on the Board's decision with this appeal exists".

In this Answer (Office Action) the Examiner withdraws the prior art rejections of claims 2-5, 7, 8, 11 and 13. This partial concession is appreciated. However, the rejection of the independent claims is still deemed improper and the appeal of the non-allowed claims is maintained.

#### ARGUMENTS

1) The Examiner's position

The Examiner takes the position that Asah et al. discloses an automated system for detecting the location of hair follicles, and that although they do not particularly teach detecting a hair without first detecting a hair follicle, his position is that: "if one detects the position of a hair follicle, the position/location of the hair issuing from such follicle is inherently detected." (Emphasis added). The Examiner then further states that "a hair will not grow out of the skin tissue without a hair follicle."

The Examiner also takes issue with the Appellant's definition of the term "hair follicle" and advances the definition that a hair follicle is: "A tubular infolding of the epidermis containing the root of a hair."

The merit of this definition over those advanced by the Appellant is his brief is not clear in that it merely clarifies that a cavity or sac is a tubular (viz., hollow) arrangement which contains the root of a hair.

2) Appellant's rebuttal

The point the Examiner is missing is that a follicle is a structure which, in effect, defines a tunnel (viz., a tubular infolding). If the tunnel is filled with a hair, then the tunnel itself cannot be seen because of the fact that it is filled and therefore obscured by the hair. It is like saying you can see down the neck of a wine bottle with the cork in it.

Therefore, while hairs are growing out of the follicles, the follicles per se cannot be expected to be observed and identified by an optical device located over the skin (see Appendix).

Accordingly, the position that, if you find the follicle you "inherently" find the hair, is flawed. Basically, you can't find the follicle if you find the hair because the hair will hide the follicle from view. Therefore, not only will the follicle not be "inherently" found (each and every time a hair is found), but the follicles will very highly likely never be found.

Further, hairs invariably lean over after having emerged from the skin and tend to lay thereover— see Appendix A for example. Therefore, at the very best, all that might be seen of a follicle is a very narrow crescent shaped outline of only a part of the upper perimeter or rim, assuming that is not also obscured by another hair. This partial outline, even if it could be seen by an optical device disposed over the skin, would be far too insufficient to enable an automated optical arrangement to automatically recognize and locate follicles.

Before the process of Asah et al. can be carried out it is necessary for the skin to be carefully shaven. While this is not expressly stated in Asah et al. the need for this preparation is known in the art and it is again pointed out that column 8, lines 6-20 Asah et al. state that:

For example, without automatic control of tissue treatment, removal of hair is a difficult task to perform as a large number of small spots having diameters of approximately 1 mm have to be pinpointed by the operator performing the treatment. According to the

present invention, the surface tissue area with hair to be removed is scanned by the handpiece. Hereby the **hair follicles** are detected by **color determinations** as described above and their positions along the scanned path of the light beam are stored in the tissue type storage means. During a second and repeated scan of the tissue area, the treating light beam is turned on and off according to the content of the tissue type storage means so that solely the **hair follicles** detected during the first scan are **treated preventing the surrounding tissue from being damaged**. (Emphasis added.)

The "small spots" having diameters of approximately "1 mm" are obviously the tops of clean shaven hairs and/or the mouths of the hair follicles which are exposed due to clean shaving. The object of Asah et al. is to cauterize the interior of the follicle to the point where hair will not regenerate. Pin point accuracy is necessary if damage of "the surrounding tissue" is to be avoided. If a hair is extending out of the follicle, then the follicle is obscured to the point where automated optical identification of the same is impossible and the necessary pin point accuracy is prevented.

The Examiner is correct "a hair will not grow out of skin tissue without a hair follicle." However, once a hair is growing out of the follicle, it is the hair and not the follicle which is visible – the cork is in the bottle and the one cannot see down the neck into the bottle any more.

It is submitted that with the prior art which has been cited that the term "hair removal" is a lay term and basically a misnomer. In this so called "hair removal" the follicles are robotically located and burnt by focussed narrow laser beams (at a level below the skin) to the point where the follicle and associated tissue is damaged sufficiently that hair will no longer regenerate.

The Examiner's position with the lack of any recitation of an algorithm in claims 1 and 15 is respectfully traversed in that claim 1 calls for control unit to *determine* the target position of the laser beam as a *function* of a position and/or orientation on the skin of a hair to be removed, as *determined from the image* by

the control unit, and to *activate* the laser source. An **algorithm** is a systematic list of instructions for accomplishing some task, and the task can be anything that has a recognizable end-point (or result). Often some of the specific steps in the procedure are to be repeated until the task is done.

It is submitted that the "determining", "activating" etc., which is set forth in claim 1 would be carried out by an algorithm irrespective of whether it is specified in the claims or not. It is submitted that the term algorithm is appropriately used to concisely describe the situation and to summarize that which is not disclosed in the Asah et al. reference.

Conclusion

It is respectfully submitted that the arguments which the Examiner has advanced in this Answer, are indicative of the basic misunderstanding on which the rejection of the claimed subject matter is based. It is again requested that the rejections of all the claims which are pending in this application be reversed and the application be passed to issue.

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## APPENDIX

Note how an optical scanner cannot "see" the skin which is in the shadow of the hair and how the "follicle" is not visible to the scanner without shaving the hair to reveal an opening into which a laser beam can be fired.

Note also how easy it would be to misfire the laser and burn the skin while a hair or hairs still project from the skin.

Note the follicle is below the skin surface and how the hair shaft blocks any view of the follicle while the hair protrudes out above the skin.

